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New isotopes and 2p radioactivity of 67Kr

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In pioneering experiments at GANIL and GSI, this 2p radioactivity was discovered in 2002 and meanwhile 45Fe, 48Ni and 54Zn are established 2p emitters.

After these discovery experiments, the investigation of 2p radioactivity was continued with time-projection chambers to study the decay dynamics via measurements of the individual proton energies and the relative proton-proton emission angle. In experiments at GANIL and MSU on 45Fe, 54Zn, and 48Ni were studied by this means.

In a recent experiment at the BigRIPS separator of RIKEN, new isotopes in the Ge to Kr region were found and a new 2p emitter, 67Kr, was discovered and its basic decay characteristics have been established, whereas two other 2p radioactivity candidates, 59Ge and 63Se, have been shown to decay by beta decay.

The talk will review the experimental results about new isotopes and production cross sections and on ground-state two-proton radioactivity and compare these results with theoretical predictions. Future studies of new 2p emitters will also be discussed.

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